

Allen / Lambert
Warehouse Development
S.R. 42 at King Mill Road

Development of
Regional Impact
Transportation Analysis

December 2006

prepared for:

Majestic Realty Company, LLC

Development of Regional Impact
Transportation Analysis
for
Allen / Lambert Warehousing
S.R. 42 at King Mill Road
Henry County, Georgia

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December 2006

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EXECUTIVE SUMMARY

Allen / Lambert Warehousing is a proposed 2,884,000 square-foot development located in the northwest quadrant of S.R. 42 and King Mill Road in Henry County, Georgia. The site consists of 163 acres that are zoned for either heavy manufacturing (M-2) or residential and agricultural uses (R-A). The subject property is vacant with the exception of single-family residences and agricultural uses totaling less than 75,000 s.f.. that will be removed with construction of the proposed development. Build-out and full occupancy is projected for late 2007 and early 2008, respectively.

Vehicular access to the site is proposed at three locations along S.R. 42 and at two locations along King Mill Road. Under an existing Georgia DOT work order, both intersections of Kings Mill Road at S.R. 42 will be signalized, which will benefit access to the site in the future. In addition, this site is rail-served. The tract is bound on its western site by a Norfolk Southern line, which will have a spur into the back of the development. It is estimated that 20% of all materials entering the site will arrive via rail.

As part of the Georgia Regional Transportation Authority's (GRTA) DRI process, a transportation impact analysis was performed for seven existing intersections in the vicinity of the proposed site. Intersections included in this study network are as follows:

- I-75 interchange at S.R. 155
- S.R. 155 at King Mill Road
- S.R. 155 at S.R. 42
- S.R. 42 at King Mill Road (north)
- S.R. 42 at King Mill Road (south)
- S.R. 42 at Bill Gardner Parkway

During the traffic impact analysis, each intersection was analyzed for the existing, future background (no-build) year and the future (build) year to determine the incremental impact of traffic generated by the proposed development.

Each intersection was analyzed under six analysis scenarios, which are described in detail in later sections of this report. Deficient intersections were mitigated to Henry County's level-of-service (LOS) standard of LOS D. The results of these analyses are presented in the following table:

| Summary of Intersection Operations With and Without Recommended Improvements | | | | | | | | | | | | |
|--|---------------------|----|----------------------------|----|-----------------|----|------------------------|----|-------------------|----|--------------------------|----|
| Intersection | Existing Conditions | | Existing with Improvements | | Base Conditions | | Base with Improvements | | Future Conditions | | Future with Improvements | |
| | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM | AM | PM |
| I-75 SB ramps at S.R. 155 | C | D | -- | -- | D | D | -- | -- | D | E | D | D |
| I-75 NB ramps at S.R. 155 | B | B | -- | -- | B | C | -- | -- | C | C | B | C |
| S.R. 155 at King Mill Rd. | D | D | -- | -- | E | D | D | D | F | F | D | D |
| S.R. 155 at S.R. 42 | C | C | -- | -- | C | C | -- | -- | D | D | -- | -- |
| S.R. 42 at Northern Access | -- | -- | -- | -- | -- | -- | -- | -- | A | A | -- | -- |
| S.R. 42 at Center Access | -- | -- | -- | -- | -- | -- | -- | -- | A | A | -- | -- |
| S.R. 42 at King Mill Rd. (north) | A | A | -- | -- | B | B | -- | -- | B | B | -- | -- |
| S.R. 42 at King Mill Rd. (south) | A | C | -- | -- | B | B | -- | -- | B | B | -- | -- |
| King Mill Rd. at Eastern Access | -- | -- | -- | -- | -- | -- | -- | -- | A | A | -- | -- |
| King Mill Rd. at Western Access | -- | -- | -- | -- | -- | -- | -- | -- | A | A | -- | -- |
| S.R. 42 at Bill Gardner Pkwy. | D | F | B | C | E | F | C | C | E | F | C | D |

A summary of the improvements recommended for the existing, background, and future conditions is provided in the following sections:

Existing Conditions

S.R. 42 at Bill Gardner Parkway is the only intersection in the study network that is projected to operate below the LOS standard. To achieve LOS D operations, it is recommended that the existing signal be modified to include an overlap right-turn phase for vehicles on eastbound Bill Gardner Parkway. This would allow the right-turn movement, which is currently yield-controlled, to operate as a free-flow lane during the protected left-turn phase on northbound S.R. 42.

Future Year Background Conditions

The future year background condition is an analysis of operations in the study area in 2008 without traffic generated by the proposed warehousing development. This condition includes traffic generated by background growth and any capacity improvements planned for completion prior to build-out year. In 2005, a Traffic Engineering Study was performed for the intersections of S.R. 42 with King Mill Road (north and south). This study recommended signalization at both intersections. Signal installation was contingent on construction of a left-turn lane for southbound S.R. 42 and a right-turn lane for northbound S.R. 42.

As in the existing condition, the intersection of S.R. 42 at Bill Gardner Parkway requires improvements to operate within the LOS standard. In addition, the intersections of S.R. 155 at King Mill Road would require additional capacity to serve projected base condition demand in 2008. The following improvements are recommended to mitigate base conditions:

S.R. 155 at King Mill Road / Industrial Boulevard

- Modify intersection to include dual left-turn lanes on northbound King Mill Road and a shared through / right-turn lane. Also address alignment issues that would be created with Industrial Boulevard on the north side of the intersection.
- Provide protected-permissive left-turn phasing for southbound approach of Industrial Boulevard.

S.R. 42 at Bill Gardner Parkway

- As recommended in the existing condition, modify traffic signal to include eastbound right-turn overlap phasing.

Future Year Total Traffic Conditions

This scenario analyzes operations after the proposed warehouse development is completed. The development is projected to add an estimated 5,427 daily trips to the adjacent roadway network at full build-out. This projection includes 447 morning peak hour trips and 460 evening peak hour trips. Improvements necessitated by the additional traffic are summarized in the sections that follow.

I-75 Southbound ramps at S.R. 155

Deficiencies at this intersection are due to the left-turn volumes from the southbound ramp, which have one exclusive left-turn lane. Addition of a second left-turn lane would improve operations, but would require an additional through receiving lane to be useful. Although there are currently two receiving lanes, one ends as a left-turn lane onto I-75 northbound. If this trap lane were used as receiving lane for vehicles from I-75 southbound, a heavy weaving movement would be created. Therefore, this improvement would require the additional eastbound through lane to continue through King Mill Road.

S.R. 155 at King Mill Road

Previously, the following improvements were recommended to mitigate base condition deficiencies:

- Modify intersection to include dual left-turn lanes on northbound King Mill Road and a shared through / right-turn lane. Also address alignment issues that would be created with Industrial Boulevard on the north side of the intersection.
- Provide protected-permissive left-turn phasing for southbound approach of Industrial Boulevard.

However, to provide LOS D operations, an additional eastbound through lane on S.R. 155 would also be required. As described previously, this improvement was also recommended between the I-75 southbound and I-75 northbound ramps. The future condition analysis indicates that it should extend to King Mill Road and through the intersection, where it will eventually extend to S.R. 42 according to the 2030 RTP for this area.

S.R. 42 at Bill Gardner Parkway

As recommended in the existing and base conditions, modify traffic signal to include eastbound right-turn overlap phasing.

PROJECT DESCRIPTION

Allen / Lambert Warehousing is a proposed 2,884,000 square-foot development located in the northwest quadrant of S.R. 42 at King Mill Road in Henry County, Georgia. The site consists of 163 acres that are vacant with the exception of single-family residences and agricultural uses totaling less than 75,000 s.f.. All existing uses will be removed with construction of the proposed development.

Vehicular access to the site is proposed at three locations along S.R. 42 and at two locations along King Mill Road. In addition, this site is rail-served. The tract is bound on its western site by a Norfolk Southern line, which will have a spur into the back of the development. It is estimated that 20% of all materials entering the site will arrive via rail.

The location of the site with respect to the adjacent roadway network is shown in Figure 1.

Phasing and Build-Out Schedule

Allen / Lambert Warehousing is planned for completion in 2007 and would be fully occupied in early 2008. For the purposes of the DRI submittal, one phase of development will be analyzed within a two-year build-out.

Existing and Proposed Zoning and Land Use Category

The existing zoning of the site is a mix of M-2 (Heavy Manufacturing District) and RA (Residential-Agricultural District). Rezoning of the RA portion of the site to M-2 is required to permit the proposed warehouse uses.

The Henry County Future Land Use Map designates the entire site Industrial and Wholesale. No modification to this plan is being sought.

LOS Standards

In accordance with GRTA guidelines, a LOS standard of D was chosen based on roadway classifications ranging from major arterials to collectors..

Site Plan

A full size copy of the site plan is provided with the application package and electronically.

Figure 1: Location Map

TRIP GENERATION AND STUDY NETWORK DETERMINATION

Trip Generation

Trip generation for the proposed warehouse uses was based on rates and equations provided in the 7th edition of Trip Generation, published by the Institute of Transportation Engineers (ITE). *ITE Land Use 150 – Warehousing* was selected for this site as the most appropriate category. The trip generation was reduced by 45%, as is allowed by GRTA, to account for local data that has shown much lower trip generation for this type of use. According to ITE data for industrial uses, truck traffic comprises 1% to 22% of industrial traffic with an average of 8% truck traffic for all uses. Based on the nature of this proposed use, it was assumed that 15% of the projected traffic would be trucks and 10% of the total traffic would be rail traffic and not affect the roadways in this project.

Trip generation is presented in Table 1.

| Table 1 | | | | | | | | |
|--|----------------|----------------|------|-------|----------------|------|-------|------------------|
| Trip Generation for Allen / Lambert Warehousing | | | | | | | | |
| Land Use | Size | A.M. Peak Hour | | | P.M. Peak Hour | | | 24-hour 2-way |
| | | Enter | Exit | Total | Enter | Exit | Total | |
| Warehousing | 2,884,000 s.f. | 408 | 89 | 497 | 128 | 383 | 511 | 6,030 |
| - <i>passenger cars</i> | | 306 | 67 | 373 | 96 | 287 | 383 | 4,522 |
| - <i>trucks</i> | | 61 | 13 | 74 | 19 | 58 | 77 | 905 |
| - <i>rail</i> | | 41 | 9 | 50 | 13 | 38 | 51 | 603 |

Traffic Distribution

Trip distributions of traffic entering and exiting the site was estimated for trucks transporting goods to and from the warehouse and for passenger vehicles driven by employees or visitors to the site. Truck traffic will be heavily oriented toward I-75 and the distribution between north and south was based on anticipated operating information from the developer. The distribution of employee traffic was based on the population density surrounding the site. Each trip distribution is shown in Figure 2.

Study Network

According to GRTA procedures, the study network includes any link for which the project's traffic constitutes more than 7% of the service capacity. Therefore, the daily trip generation was compared to the service capacity of the surrounding roadways. The trip distribution, discussed previously, and daily trip generation presented in Table 1 were the bases for the calculations presented in Table 2.

Figure 2: Trip Distribution

| Table 2 Study Network Determination | | | | | |
|--|----------------------------------|------------------------------|------------------------|---------------------------|--------------------|
| Roadway Segment | Adjusted Facility Service Volume | Project Traffic Distribution | Project Trips Assigned | % Service Volume Consumed | Presumptive Impact |
| S.R. 155 west of I-75 | 14,900 | 2% | 121 | 0.81% | No |
| S.R. 155 between I-75 and King Mill Rd. | 14,900 | 74% | 4,462 | 29.95% | Yes |
| S.R. 155 between King Mill Rd. and S.R. 42 | 32,500 | 74% | 4,462 | 14.45% | Yes |
| S.R. 42 north of S.R. 155 | 14,900 | 6% | 362 | 2.43% | No |
| S.R. 42 between S.R. 155 and King Mill Rd. | 14,900 | 84% | 5,065 | 40.96% | Yes |
| S.R. 42 between King Mill Rd. and King Mill Rd. | 14,900 | 100% | 6,030 | 40.47% | Yes |
| S.R. 42 between King Mill Rd. and Bill Gardner Pkwy. | 14,900 | 16% | 965 | 6.48% | No |
| S.R. 42 south of Bill Gardner Pkwy. | 14,900 | 5% | 302 | 2.02% | No |
| Bill Gardner Pkwy. between I-75 and S.R. 42 | 32,500 | 11% | 663 | 2.04% | No |

Based on this analysis and discussions with GRTA officials, the following intersections are included in the study network:

- I-75 interchange at S.R. 155
- S.R. 155 at King Mill Road
- S.R. 155 at S.R. 42
- S.R. 42 at King Mill Road (north)
- S.R. 42 at King Mill Road (south)
- S.R. 42 at Bill Gardner Parkway

These intersections are in addition to the five proposed site driveways, which will also be analyzed for the future condition.

Peak Hour Traffic Assignment

Net peak hour traffic volumes generated by the Allen / Lambert tracts, presented in Table 1, were assigned to each intersection in the study network according to the appropriate trip distributions shown in Figure 2. During this assignment, consideration was given to the driver's destination on site and ease of access at each driveway. Site-generated volumes for are shown in Figure 3 for the weekday morning and evening peak hours.

Figure 3: Site-generated Volumes

EXISTING FACILITIES

An inventory of the roadway facilities providing access to the site was performed. Following is a brief description of each facility. A schematic diagram of the study network is provided in Figure 4 to more clearly depict the intersection geometries.

Interstate 75 (I-75)

Interstate 75 has a half cloverleaf interchange at S.R. 155 and will provide the primary entry point to the study network. The ramps from northbound S.R. 155 and onto southbound S.R. 155 are the cloverleaf portions and have signs warning against truck overturns. For this reason, some trucks from the south may prefer to use the diamond interchange at Bill Gardner Parkway. The interstate ramps at both locations are signalized.

State Route 155 (S.R. 155)

State Route 155 is generally a north-south roadway and extends from downtown Griffin in Spalding County through Henry County before terminating at the DeKalb County line. At this terminus, the state route designation is dropped, but the roadway continues as Snapfinger Road. In the vicinity of the site, S.R. 155 is classified as a minor arterial west of I-75 and a principal arterial between I-75 and Covington Street. Within the study area, S.R. 155 is more commercial on its southern end around the I-75 interchange and beyond King Mill Road. In this section, S.R. 155 is generally a three-lane section including a single through lane in each direction and a center two-way left-turn lane that becomes striped left-turn lanes at major signalized intersections. There are also right-turn lanes into some private driveways. Approaching S.R. 42, S.R. 155 becomes less developed and becomes an undivided two-lane rural section.

S.R. 155 is signalized at the I-75 interchange, King Mill Road, and S.R. 42. At the I-75 interchange, there are two through lanes extending across the bridge from I-75 southbound, with one terminating as a left-turn lane onto northbound I-75. Elsewhere in the study network, S.R. 155 has a single through lane and exclusive left-turn lane on each approach. Right-turn lanes are also provided along all signalized approaches with the exception of the westbound right-turn onto S.R. 42.

Georgia Department of Transportation (DOT) records average annual daily traffic (AADT) volumes along its state routes. For the 2005 reporting year, there are counts stations at three locations along S.R. 155 within the study area. Immediately east of I-75, the AADT volume was 18,370 vehicles per day (vpd). At S.R. 42, AADT volumes of 23,560 vpd and 17,320 vpd were reported west and east of the intersection, respectively. The posted speed limit on S.R. 155 is 45 mph in the vicinity of the site.

Figure 4: Existing Geometry.

State Route 42

S.R. 42 (also U.S. 23 in the vicinity of the site) extends from U.S. 341 in Crawford County to S.R. 138 in Stockbridge, Georgia. Although the roadway generally extends east / west, it is a north / south roadway in the vicinity of the site and will be referenced as such in this report. Within the study area, S.R. 42 has one through lane in each direction and is classified as a minor arterial.

S.R. 42 is signalized at S.R. 155 and at Bill Gardner Parkway. At S.R. 155, S.R. 42 has exclusive left-turn and right-turn lanes on each approach. At Bill Gardner Parkway, which is a three-legged intersection, S.R. 42 has an exclusive northbound left-turn and exclusive southbound right-turn lane.

S.R. 42 intersects King Mill Road at two locations on opposing sides of the roadway. The southern intersection, which is side-street stop-controlled, serves an existing business park. At this intersection, S.R. 42 has an exclusive northbound left-turn lane and an exclusive southbound right-turn lane onto King Mill Road. The northern intersection of King Mill Road and S.R. 42 is also side-street stop-controlled, but has only one through lane in each direction with no exclusive turn lanes on either approach.

In 2005, Georgia DOT reported AADT volumes on 9,950 vpd and 7,480 vpd on S.R. 42 north and south of S.R. 155, respectively. An AADT volume of 10,160 vpd was reported on S.R. 42 north of Bill Gardner Parkway during the same period. The posted speed limit on S.R. 42 is 55 mph at S.R. 42 and along the proposed site frontage. Around Bill Gardner Parkway, the speed limit is reduced to 45 mph.

King Mill Road

King Mill Road is a two-lane roadway that is jogged at S.R. 42. The west section of the roadway is a local street extending from S.R. 155, aligned with Industrial Boulevard, to S.R. 42. The eastern section of King Mill Road is a two-lane minor collector and intersects S.R. 42 north of the western section. At Tussahaw Creek, King Mill Road bends to the north and terminates at Old Jackson Road.

At the southern intersection of King Mill Road and S.R. 42, King Mill Road is side-street stop-controlled and has exclusive left-turn and right-turn lanes onto S.R. 42. At the northern intersection of King Mill Road with S.R. 42, King Mill Road is side-street stop-controlled and has a single shared lane for vehicles turning onto S.R. 42.

Daily traffic volumes were not collected on King Mill Road.

Bill Gardner Parkway

Bill Gardner Parkway is an east-west roadway that extends from the terminus of Locust Grove

Road at S.R. 155 and continues east to S.R. 42. Bill Gardner Parkway has a diamond interchange with I-75, making it a major collector.

The cross-section of Bill Gardner Parkway varies, primarily around its I-75 interchange. West of I-75, Bill Gardner Parkway is a two-lane rural section. Eastbound Bill Gardner Parkway widens to two through lanes approaching the southbound I-75 ramps and has an eastbound left-turn lane onto northbound I-75. East of I-75, there are right-turn deceleration lanes into commercial developments along the south side of the roadway. Westbound Bill Gardner Parkway has two through lanes extending to the I-75 interchange, with the inside through lane terminating as a left-turn lane onto I-75 southbound. Bill Gardner Parkway has a two-way left-turn lane for segments east of I-75.

In 2005, Georgia DOT reported an AADT volume of 7,090 vpd on Bill Gardner Parkway west of I-75.

EXISTING TRAFFIC CONDITIONS

Existing weekday peak hour traffic counts were performed at each intersection in the study area on Thursday, October 19, 2006. Counts were performed during the morning and evening peak periods, which occur between 7:00 a.m. and 9:00 a.m. and 4:00 p.m. and 6:00 p.m., respectively. Existing traffic volumes are shown in Figure 5 for the weekday morning and evening peak hours.

Existing operations were evaluated at each intersection using HCM methodology. The results of these analyses are presented in Table 3.

| Table 3 | | |
|---|----------------|----------------|
| Existing Intersection Operations | | |
| Intersection | A.M. Peak Hour | P.M. Peak Hour |
| | LOS | LOS |
| I-75 SB ramps at S.R. 155 | C | D |
| I-75 NB ramps at S.R. 155 | B | B |
| S.R. 155 at King Mill Rd. | D | D |
| S.R. 155 at S.R. 42 | C | C |
| S.R. 42 at King Mill Rd. (north) | A | A |
| S.R. 42 at King Mill Rd. (south) | A | C |
| S.R. 42 at Bill Gardner Pkwy. | D | F |

As indicated by the results in Table 3, all intersections in the study network operate acceptably during the morning peak hour in the existing condition. However, the intersection of S.R. 42 at Bill Gardner Parkway operates at LOS F during the existing evening peak hour. The major movement at this intersection during the evening peak hour is eastbound right-turn from Bill Gardner Parkway onto southbound S.R. 42. Over 700 vehicles were recorded making this movement. There is currently an exclusive turn lane for these vehicles, but the movement yields to southbound through traffic. Addition of an overlap right-turn phase to the eastbound approach improves evening peak hour operations to LOS C. Furthermore, morning peak hour operations improve to LOS B. Addition of this phase would allow the eastbound right-turn to operate as free-flow during the left-turn phase on northbound S.R. 42.

This improvement is shown in Figure 6.

Figure 5: Existing Volumes

Figure 6: Existing Improvements

PLANNED TRANSPORTATION IMPROVEMENTS

The Atlanta Regional Commission's (ARC) Transportation Improvement Program, Regional Transportation Program, and Georgia DOT's Statewide Transportation Improvement Program were reviewed for transportation projects in the vicinity of the site that would affect capacity by 2011. The following is a summary of each planned improvement identified in the study network:

- *ARC Project No. HE 113* – Widening of S.R. 155 between I-75 and S.R. 42 from a two-lane section to a four-lane section. Projected completion: 2030. (\$7.54M: 80% Federal / 20% State funds.)
- *Georgia DOT – Work Order #57*- Installation of traffic signals at the northern and southern intersections of King Mill Road with S.R. 42 (M.P. 8.53). Construction of northbound right-turn lane on S.R. 42 and southbound left-turn lane on S.R. 42 at northern King Mill Road intersection.

FUTURE BACKGROUND TRAFFIC CONDITIONS (2008)

Future background traffic in 2008 was projected by estimating traffic growth at each intersection in the study network. A review of growth trends was performed based on historical daily traffic volumes maintained by Georgia DOT in the vicinity of the site. Available daily volume data are presented in Table 4.

| Location | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | % change |
|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| S.R 155 east of I-75 | 10,657 | 11,484 | 12,832 | 11,680 | 11,975 | 20,235 | 19,430 | 20,420 | 18,370 | 7.04% |
| S.R. 155 west of S.R. 42 | 10,410 | 11,723 | 13,037 | 13,000 | 13,639 | 18,381 | 19,730 | 21,490 | 23,560 | 10.75% |
| S.R. 155 east of S.R. 42 | 8,347 | 8,658 | 9,674 | 12,103 | 11,471 | 15,478 | 15,630 | 17,580 | 17,320 | 9.55% |
| S.R. 42 north of S.R. 155 | 7,109 | 5,875 | 5,636 | 8,022 | 8,300 | 9,338 | 8,130 | 9,840 | 9,950 | 4.29% |
| S.R. 42 south of Wise Rd. | 5,067 | 5,600 | 5,372 | 7,444 | 7,700 | 7,781 | 7,990 | 7,880 | 7,480 | 4.99% |
| S.R. 42 south of Bethlehem Rd. | 6,073 | 6,267 | 6,012 | 8,060 | 7,107 | 9,734 | 10,020 | 10,920 | 10,160 | 6.64% |
| S.R. 42 south of B. Gardner Pkwy. | 14,552 | 13,731 | 13,171 | 14,920 | 18,790 | 20,332 | 19,850 | 20,370 | 21,390 | 4.93% |
| Bill Gardner Parkway east of I-75 | 1,677 | 2,003 | 2,550 | 2,260 | 3,626 | 3,561 | 3,550 | 3,610 | 7,090 | 19.75% |

The information presented in Table 4 indicates that growth in the area has been aggressive since 1997, but has slowed considerably on the state routes since 2002. Based on overall growth, with more consideration given to recent years' data, the following growth rates were used to project base condition traffic volumes:

- S.R. 155 - 4%
- I-75 - 4%
- King Mill Road - 2%
- S.R. 42 - 3%
- Bill Gardner Parkway - 10%

Projected base condition traffic volumes are shown in Figure 7 for the 2008 weekday morning and evening peak hour.

Future background traffic operations were evaluated at each intersection in the study area using HCM methodology and the base year geometry and traffic control. Base year geometry includes traffic signal installations at each intersection of King Mill Road at S.R. 42 and construction of an exclusive southbound left-turn lane and northbound right-turn lane at the northern intersection of S.R. 42 and King Mill Road. Results of the background condition analysis are presented in Table 5.

Figure 7: Base Condition Volumes

| Table 5 | | |
|--|----------------|----------------|
| Background Intersection Operations (2008) | | |
| Intersection | A.M. Peak Hour | P.M. Peak Hour |
| | LOS | LOS |
| I-75 SB ramps at S.R. 155 | D | D |
| I-75 NB ramps at S.R. 155 | B | C |
| S.R. 155 at King Mill Rd. | E | D |
| S.R. 155 at S.R. 42 | C | C |
| S.R. 42 at King Mill Rd. (north) | B | B |
| S.R. 42 at King Mill Rd. (south) | B | B |
| S.R. 42 at Bill Gardner Pkwy. | E | F |

Discussion of operations and required improvements are provided for each deficient intersection in the sections that follow.

S.R. 155 at King Mill Road / Industrial Boulevard

The intersection of S.R. 155 at King Mill Road is projected to operate at LOS E during the 2008 base condition morning peak hour. King Mill Road serves several commercial / industrial developments and links S.R. 155 to S.R. 42. The eastbound approach of S.R. 155 and all left-turn movements at the intersection operate over capacity and with delays greater than the desired LOS standard. In order to address the increasing volume of left-turns along the northbound King Mill Road approach, it is recommended that a second left-turn lane be added, which would require signal modification to allow protected-only left-turns. This approach currently has three approach lanes, with exclusive left-turn, through, and right-turn movements. Due to low volumes of right-turns, the through movement and right-turn movement could share a single lane, which would minimize the additional pavement that would need to be added. Alignment issues with Industrial Boulevard, on the north side of the intersection, would have to be addressed in the intersection design.

To further improve operations, it is recommended that a left-turn protected phase be added to the southbound approach of Industrial Boulevard at this intersection. With these improvements, the intersection of S.R. 155 at King Mill Road / Industrial Boulevard is projected to operate at LOS D during both peak hours in the 2008 base condition.

S.R. 42 at Bill Gardner Parkway

Addition of an eastbound right-turn overlap phase was recommended to serve existing condition deficiencies. This improvement is also sufficient to address projected base condition deficiencies. With this signal modification, the intersection of S.R. 42 at Bill Gardner Parkway would operate at LOS C during each peak hour.

The recommended base condition improvements are illustrated in Figure 8.

Figure 8: Base condition recommendations

FUTURE TOTAL TRAFFIC CONDITIONS

Future year total traffic was computed for full build-out of the Lambert / Allen warehouse tracts by adding site-generated traffic volumes to the future year background traffic volumes. Projected future traffic volumes are shown in Figure 9 for the weekday morning and evening peak hours.

Future total traffic operations were evaluated at each intersection, including site driveways, using HCM methodology and the base year geometry and traffic control. Results of the analyses are presented in Table 6.

| Table 6 | | |
|--|----------------|----------------|
| Future Intersection Operations | | |
| Intersection | A.M. Peak Hour | P.M. Peak Hour |
| | LOS | LOS |
| I-75 SB ramps at S.R. 155 | D | E |
| I-75 NB ramps at S.R. 155 | C | C |
| S.R. 155 at King Mill Rd. | F | F |
| S.R. 155 at S.R. 42 | D | D |
| S.R. 42 at Northern Driveway | A | A |
| S.R. 42 at Center Driveway | A | A |
| S.R. 42 at King Mill Rd. (north) / Site Access | B | B |
| S.R. 42 at King Mill Rd. (south) | B | B |
| King Mill Road at Eastern Driveway | A | A |
| King Mill Road at Western Driveway | A | A |
| S.R. 42 at Bill Gardner Pkwy. | E | F |

Discussion of operations and required improvements are provided for each deficient intersection in the sections that follow.

I-75 Southbound Ramps at S.R. 155

The interchange of I-75 with S.R. 155 is projected to operate at LOS E during the future evening peak hour. Over 700 left-turns from the ramp onto eastbound S.R. 155 are projected during this period. In order to serve this volume, addition of a second left-turn is required. This would require a second receiving lane on S.R. 155, as well. Currently, there are two receiving lanes, but one terminates as a left-turn lane onto the northbound I-75 ramp. Addition of a second through lane is planned by 2030, but no detailed schedule has been defined. This lane would also extend through the intersection of King Mill Road, which is discussed in the following paragraph.

S.R. 155 at King Mill Road / Industrial Boulevard

The intersection of S.R. 155 at King Mill Road is projected to operate at LOS F during the 2008 future condition peak hours with the addition of traffic from the proposed warehousing

development. King Mill Road will be heavily traveled by trucks and cars to the site since it is an alternate route between S.R. 155 and S.R. 42 that bypasses the intersection of these routes. King

Figure 9: Future Traffic Volumes

Mill Road has more capacity than S.R. 155 east of the intersection, since it is a three lane road and S.R. 155 narrows to a rural two-lane section. Access to the proposed development is also provided from this roadway. The 2030 plan for this area includes widening S.R. 155 to a four-lane section to S.R. 42, which may provide some relief to this intersection.

To serve short-term growth, the following improvements were previously recommended:

- Modification of northbound King Mill Road to provide dual left-turn lanes and a shared through / right-turn lane.
- Modification of traffic signal to include northbound left-turn protected-only phasing and southbound protected-permissive left-turn phasing.

These improvements will not improve the projected future condition to LOS D. To achieve the LOS standard at full build-out, an additional eastbound through lane on S.R. 155 would be required. As stated previously, this improvement is planned by 2030, but the exact timing of the project has not been established.

S.R. 42 at Bill Gardner Parkway

Addition of an eastbound right-turn overlap phase was recommended to serve existing and base condition deficiencies. This improvement is also sufficient to address projected future condition deficiencies. With this signal modification, the intersection of S.R. 42 at Bill Gardner Parkway would operate at LOS C during the morning peak hour and LOS D during the evening peak hour.

S.R. 42 at Site Accesses

Access to the site is proposed at three locations along S.R. 42. Based on the daily traffic volumes and the speed limit of 55 mph, left-turn and right-turn lanes are required at each driveway and this was assumed in the analysis. Based on the Georgia DOT Regulations for Driveway and Encroachment Control, a minimum 310-foot left-turn lane would be required at each location, in addition to the appropriate tapers. The criteria for left-turn lane design is presented in Table 7. These are required minimums, but the actual length should take into account the volume of truck traffic, which would require more storage than a standard passenger vehicle. Where feasible, 350 feet is recommended as a minimum.

At the signalized access aligning with King Mill Road, Georgia DOT recommends study of the peak hour volumes making each turning movement and provision of storage to accommodate the number of vehicles that would arrive during 1.5 signal cycles. The signal timing of the proposed signal has not yet been determined, and the Traffic Engineering Study (performed by Day Wilburn Associates, Inc.) for the two intersections of King Mill Road with S.R. 42 assumed fully actuated signals operating with 45-50 second cycle lengths. In this study, a minimum cycle length of 90 seconds was assumed. Based on peak hour volumes, storage for one left-turning vehicle would be required, which is less than the recommended minimum. Therefore, the minimum left-turn lane length shown in Table 7 should be provided at the signalized access, as well.

| Table 7 | | | | |
|---|--------------------|-----------|---------------|-------------------------|
| Left-Turn Lane Design Requirements | | | | |
| Speed Limit | Approach Taper, Ft | | Bay Taper, Ft | Full Width Storage, Ft. |
| | 6' Shift | 12' Shift | | |
| 55 mph | 330 | 660 | 100 | 310 |

For right-turn deceleration lanes at unsignalized intersections, Georgia DOT recommends providing 250 feet of full-width storage and a 100-foot taper on roadways with a 55 mph speed limit. Further, Georgia DOT recommends that this number be compared to the amount of storage required for vehicles that would arrive in a two-minute period. Based on the projected future right-turn volumes, a maximum of three vehicles would arrive at each driveway in an average two-minute period. Considering the truck percentage, this would convert to almost 100 feet of storage, which is less than the minimum requirement. Therefore, 250-feet of full-width right-turn lane storage is recommended at each site driveway along S.R. 42.

At the signalized access at S.R. 42 and King Mill Road, Georgia DOT recommends determination of the number of peak hour vehicles that would arrive during 1.5 signal cycles. In this case, the recommended storage based on peak hour volumes should accommodate three vehicles, which is approximately 60 feet. This is less than the 250-foot minimum required by Georgia DOT. Therefore, 250 feet of storage would be the recommendation.

King Mill Road at Site Accesses

King Mill Road is a local roadway and access requirements would be determined by Henry County officials. Based on the isolated access analysis, no auxiliary lanes are needed to provided the minimum level of service at the two driveways proposed on King Mill Road. However, due to the traffic mix and projected operations at King Mill Road's intersection with S.R. 42, exclusive left-turn lanes and right-turn lanes would benefit overall traffic operations and should be included where they are feasible.

The recommended future intersection improvements are shown in Figure 10.

Figure 10: Future Condition Recommendations

AREA OF INFLUENCE ANALYSIS

The purpose of the Area of Influence (AOI) analysis is to address the requirements of the *Procedures and Principles for GRTA Development of Regional Impact Review*, Section 3-103.7a pertaining to criteria for Non-Expedited Review. The methodology, data sources and findings are documented in the following sections.

Area of Influence Characteristics

The AOI is defined as a six road mile radius around the project site. This area was determined using ESRI's ArcView GIS network analyst tool and ARC's base roadway network. The AOI is shown in Figure 11. Approximate Area of Influence statistics are presented in Table 8. Existing land uses within the AOI are presented in Table 9.

| Table 8 | | |
|-----------------------------------|--------|------------------|
| Area of Influence Overview | | |
| Data Item | Value | Data Source |
| Land Area (acres) | 46,278 | ARC |
| Employment | 17,255 | U.S. Census- ARC |
| Population | 33,120 | U.S. Census- ARC |
| Households | 19,334 | U.S. Census- ARC |

| Table 9 | | |
|---|--------|--------|
| Existing Land Uses | | |
| Land Use | Acres | % |
| Agriculture/ Forest | 23,736 | 51.29% |
| Cemeteries | 74 | 0.16% |
| Commercial | 1,122 | 2.42% |
| Industrial | 1,533 | 3.31% |
| Institutional | 1,046 | 2.26% |
| Parks/ Recreational | 663 | 1.43% |
| Residential (Low) | 5,831 | 12.60% |
| Residential (Medium) | 7,006 | 15.14% |
| Residential (High) | 265 | 0.57% |
| Transportation/ Utilities/ Communications | 560 | 1.21% |
| Wetlands | 402 | 0.87% |
| Other | 4,040 | 8.73% |

The subject property is currently a mixture of low density residential and agriculture / forest. With approval of this DRI, this acreage would become industrial, which currently accounts for 3.31% of the land within the AOI.

Figure 11: AOI

Population

The population within six miles of the site was an estimated 33,120 persons in the 2000 census, which represents a slight decrease over population reported in the 1990 census. Growth between 1990 and 2000 was -0.08%.

Housing

Home values within the area of influence were obtained from the 2000 census. A summary of this information is presented in Table 10.

| Table 10 | | |
|---|-----------------|------------------|
| Home Values in the Area of Influence | | |
| Home Value | Number of Homes | Percent of Homes |
| < \$50,000 | 385 | 2.71% |
| \$50,000 - \$99,999 | 3,219 | 22.62% |
| \$100,000 - \$149,999 | 6,159 | 43.28% |
| \$150,000 - \$199,999 | 2,580 | 18.13% |
| \$200,000 - \$299,999 | 1,298 | 9.12% |
| \$300,000 - \$499,999 | 413 | 2.90% |
| \$500,000 - \$999,999 | 152 | 1.07% |
| > \$1,000,000 | 23 | 0.16% |

While the values in Table 23 reflected present home value, they do not necessarily correspond to the cost of living in these homes on a monthly basis to the present occupants. In addition to reporting home values, which would be the cost to a new resident to the area, the census reports what current residents are paying for housing expenses. These values range from owners with no mortgages to those with mortgage payments in excess of \$2,000 a month. A summary of this data is presented in Table 11.

| Table 11 | | |
|--|-----------------|------------------|
| Monthly Mortgage Costs in the Area of Influence | | |
| Monthly Mortgage Payment | Number of Homes | Percent of Homes |
| No Mortgage | 2,068 | 14.53% |
| < \$300 | 35 | 0.25% |
| \$300 - \$499 | 250 | 1.76% |
| \$500 - \$699 | 835 | 5.87% |
| \$700 - \$999 | 3,401 | 23.90% |
| \$1,000 - \$1,499 | 5,427 | 38.14% |
| \$1,500 - \$1,999 | 1,396 | 9.81% |
| > \$2,000 | 817 | 5.74% |

According to census data, the approximate monthly cost for those residents who have a mortgage is \$1,105 per month. For all housing, including those with no mortgage, the median monthly housing cost for owned-homes is \$296.

Rental costs in the area were estimated based on information from the 2000 census for ZIP codes within the AOI. A summary of rental unit costs is presented in Table 12. The approximate median rental cost is \$715 within the AOI.

| Table 12 | | |
|--|-----------------|------------------|
| Rental Costs in the Area of Influence | | |
| Monthly Rental Costs | Number of Units | Percent of Units |
| < \$200 | 199 | 7.58% |
| \$200-\$299 | 64 | 2.44% |
| \$300-\$499 | 399 | 15.20% |
| \$500-\$749 | 869 | 33.10% |
| \$750-\$999 | 730 | 27.81% |
| \$1,000-\$1,499 | 327 | 12.46% |
| > \$1,500 | 37 | 1.41% |

Household Income

Reported household incomes within the AOI for 2000 were taken from census data collected by ARC. The average household salary was \$60,359 annually. Data are presented in Table 13.

| Table 13 | |
|---|--------------|
| Average Household Income in the Area of Influence (2004) | |
| Household Salary Range | # Households |
| < \$10,000 | 802 |
| \$10,000 - \$19,999 | 929 |
| \$20,000 - \$39,999 | 3,802 |
| \$40,000 - \$59,999 | 4,628 |
| \$60,000 - \$74,999 | 3,108 |
| \$75,000 - \$124,999 | 4,534 |
| > \$125,000 | 1,531 |

ASSESSMENT OF DRI CRITERIA

Criteria 1-3 (Improved Regional Mobility)

The proposed industrial use is not likely to promote improved regional mobility under the first three GRTA criteria, which assess the urban character, availability of transit, and location of the site. The development is located within an industrial area with the primary growth also being industrial.

Criterion 4 (Proximity to Transit Facilities)

The proposed warehouse development is not served by mass transit facilities. However, 20% of the materials for delivery would arrive by rail.

Criterion 5 (Transportation Management Area)

The proposed warehouse development is not located within an established Transportation Management Area.

Criterion 6 (Vehicular Trip Reduction)

The nature of this development does not allow for reduction in trips based on mixed use or transit. However, a railroad spur will reduce some vehicular traffic to the site. It is estimated that 20% of the goods that are delivered to the site for distribution will come from rail service. These goods will subsequently leave the site by truck.

Criterion 7B (Land Use Balance)

To improve regional mobility, it is desirable to have a balance of uses either within the DRI or the AOI that would reduce commute distances. Because this development is exclusively employment, it is the goal to show that 25% of the employees of the development could find affordable housing within the AOI. Salaries for employees of this development and total household salaries were projected using GRTA's Area of Influence Guidebook for Non-expedited Reviews.

Table 14 presents a breakdown of the estimated number of full-time employees for the development, anticipated salary, and range of affordable housing for each. The GRTA category for Industry / Manufacturing was chosen as the closest match to the Warehousing / Distribution activities that will occur on site.

| Table 14 | | | | |
|------------------------------------|----------------------------|--------------------------------|---------------------------------|-----------------------------------|
| Employment and Housing Cost | | | | |
| Project Component | Number of Employees | Monthly Employee Salary | Monthly Household Salary | Affordable Housing Payment |
| Warehousing | 1,400 | \$3,600 | \$5,400 | \$1,620 |

The housing costs, as presented previously in Tables 11 and 12, were further broken down and are combined in Table 15 to show the total number of housing units within each monthly price range for all occupant types.

| Table 15 Number of Households and Housing Units in the DRI by Range on Monthly Income | | | |
|--|--|---|--|
| Range of Monthly Housing Costs | Owner Occupied Units in the AOI | Renter-Occupied Units in the AOI | Total Occupied Housing Units in the AOI |
| \$499 or less | 2,353 | 662 | 3,015 |
| \$500 to \$599 | 417 | 348 | 765 |
| \$600 to \$699 | 418 | 348 | 766 |
| \$700 to \$799 | 1,113 | 320 | 1,453 |
| \$800 to \$899 | 1,134 | 292 | 1,426 |
| \$900 to \$999 | 1,134 | 292 | 1,426 |
| \$1,000 to \$1,249 | 2,714 | 163 | 2,877 |
| \$1,250 to \$1,499 | 2,713 | 163 | 2,876 |
| \$1,500 to \$1,999 | 1,396 | 37 | 1,433 |
| \$2,000 or more | 817 | 0 | 817 |
| Total | 14,229 | 2,625 | 16,854 |

The household salaries for employees within the DRI and the AOI monthly housing costs are compared in Table 16 to show the number of employees who could realistically be expected to find affordable housing within the AOI.

| Table 16 Number of Households and Housing Units in the DRI by Range on Monthly Income | | | |
|--|--|--|---|
| Monthly \$ Range | Total Occupied Housing Units in AOI | Number of DRI Worker Households | Difference in the Number of Housing Units and Number of Households With One or More Workers in the DRI |
| \$499 or less | 3,015 | -- | 3,015 |
| \$500 to \$599 | 765 | -- | 765 |
| \$600 to \$699 | 766 | -- | 766 |
| \$700 to \$799 | 1,453 | -- | 1,453 |
| \$800 to \$899 | 1,426 | -- | 1,426 |
| \$900 to \$999 | 1,426 | -- | 1,426 |
| \$1,000 to \$1,249 | 2,877 | -- | 2,877 |
| \$1,250 to \$1,499 | 2,876 | -- | 2,876 |
| \$1,500 to \$1,999 | 1,433 | 1,400 | 33 |
| \$2,000 or more | 814 | -- | 814 |
| Total | 16,854 | 1,400 | 15,454 |

As indicated by the results in Table 16, each of the 1,400 households that will have employees within the DRI can find compatible housing opportunities within the six-mile area of influence.

Appendix

Traffic Volume Worksheets

Existing Intersection Analysis

**Existing Intersection Analysis
With Recommended Improvements**

Future Year Background Analysis

**Future Year Background Analysis
with Recommended Improvements**

Future Analysis

**Future Analysis
with Recommended Improvements**